The Macdonald Journal

FEBRUARY 1981

SPECIAL DAIRY ISSUE

A brew with a crisp, bright taste

RallyE!

From O'Keefe, the Master Brewers

The Macdonald Journal

FEBRUARY 1981

me 41, No. 12
ember, 1980

me 42, No. 1
ıary, 1981

The Macdonald Journal is published by the Extension Program of the Faculty of Agriculture of Macdonald Campus of McGill University.

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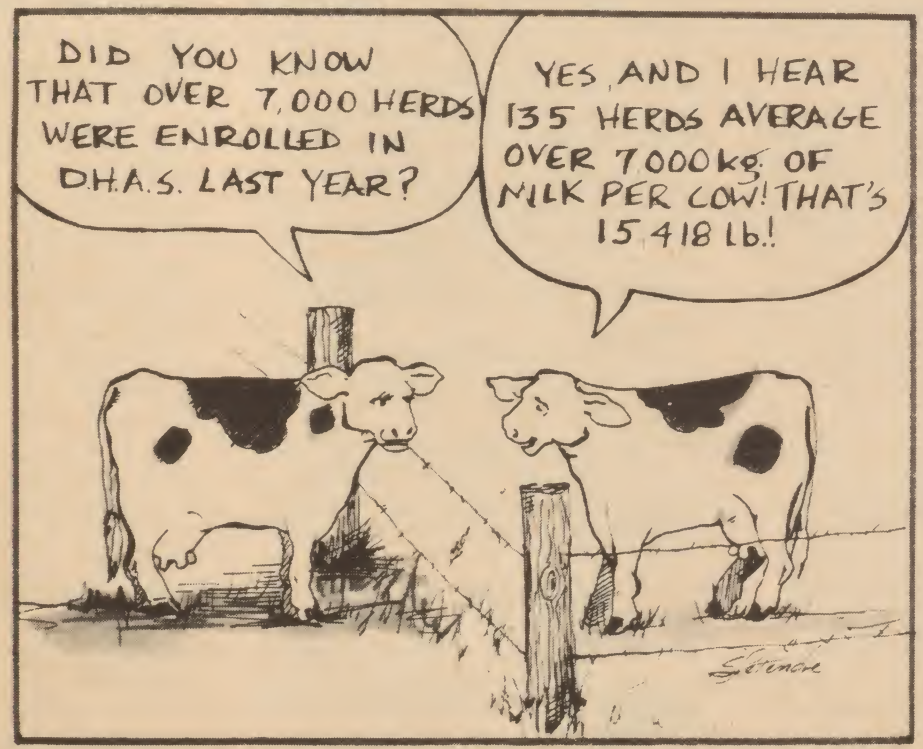
Second class mail registration number 0463.

Subscription rates are $3.00 for one year, $5.00 for two years, and $7.00 for three years in Canada. Outside Canada — $7.00 for two years.

Printed by Harpell's Press Co-operative, Gardenvale, Quebec.

In This Issue

Cover: The emphasis in this Special Dairy Issue is on quality forages



Drawings by Sandra Latendre

Editorial

Getting Involved in Milk Recording

The 1980s will bring many changes to milk recording services in Canada. The need for these changes was brought sharply into focus when the Dairy Farmers of Canada and the Canadian Milk Recording Board co-sponsored a conference in Montreal in October 1980 to discuss the present state and future needs of milk recording.

One of the conference keynote speakers, Mr. Lionel Laroche, of Warwick, Quebec, the owner of one of Quebec's highest producing herds stated, "We must recognize that solutions have to be found to enable milk producers to derive greater benefits from existing milk recording services and to try to improve further the tools already available."

What is the state of milk recording in Canada? Not good enough! Generally, most programs across the country are operating under severe limitations. Reasons range from a shortage of finances or an insufficient number of personnel to low government priority or the bureaucracy normally associated with government services which inhibit making essential changes and taking advantage of new developments as quickly as necessary. Since nearly all of our programs across Canada operate as provincial or federal government services and are adversely affected by these limitations, the confidence of Canadian milk producers in milk recording is becoming somewhat negative. The exception to this national situation is in the Province of Quebec and that is due to the development of DHAS in 1966. The report of the October conference notes, "That the Quebec DHAS program is the most comprehensive available in Canada and stands in high regard in the North American context." While some satisfaction can be enjoyed from this recognition, it must be understood that many improvements still can be made and must be continually implemented in order that the dairy farmer can derive even greater benefits from this program.

With most programs restricted budgets are the main problem. Costs of providing a quality service increased tremendously during the 1970s and, at the same time, governments faced taxpayer resistance to increased support for large labour-intensive programs directly affecting a relatively small portion of the general population. Another related problem is that the portion of the costs of these programs paid for by dairy farmer fees (about 10 to 25 per cent) is so small that the farmer using the service has little or no influence on policy making within the particular service.

As a comparison, the same services available in the United States are more flexible, computer management information systems are more up to date, turn around time is better, and all this exists within a framework which is almost entirely paid for by dairy farmer user fees and has policy dictated and management provided by dairy farmer organizations.

The October conference, which included dairy farmer participation from all parts of Canada, discussed these problems and a clear consensus emerged as to what Canada wants and needs.

Some ambitious objectives for Canadian milk recording were identified:
1) Expansion of producer participation in milk recording to 80 per cent of the national herd by 1990;
2) Universal availability of an optimal range of management services to all farmers on milk recording;
3) Optimal exploitation of the potential for genetic improvement of the national herd. This would result in a doubling of young bulls tested annually;
4) The necessary degree of integration of Canadian programs to realize these objectives;
5) The necessary degree of provincial and/or regional administration and program development required for effective producer participation.

These are ambitious objectives and the conference identified some of the action needed in order that they be realized. Most importantly, **PRODUCERS MUST BECOME INVOLVED.** Producer organizations must insure that there is "grass roots" involvement of their memb ships in milk recording programs.

The conference noted that the policies which will emerge from t producer involvement will need t recognize that an increased shar the financing of these programs must be assumed by producers a that this increased cost must ref a growing program and improvin services and not a contraction o government support. There are sound arguments for continuing public financial support at least a present levels, and there are als sound arguments for a share of financial support being charged all dairy producers since they benefit from milk recording indir (e.g., the use of proven A.I. sires whether they are actually on a recording program or not.

The question that arises is: wha can I as an individual producer make this happen? Most import if your herd is not now enrolled milk recording program, you sh seriously consider doing so. It means dollars in your pocket. W producer marketing organizatio breed associations, or other pr ducer meetings, you should be sidering some of these questio What other information should milk recording program provide producer? Perhaps recording m speed of daughters of A.I. sires an example. Should all dairy fa pay a portion of the cost of a m recording service whether thei is enrolled or not? Should a pro tion record on the dam be a re ment for registering a purebred animal? Should we be continui record data for "official" lacta as we do now, which is labour intensive and extremely expen or should we be examining alt natives such as alternate a.m. — p.m. recording plans? answers will affect future milk ding.

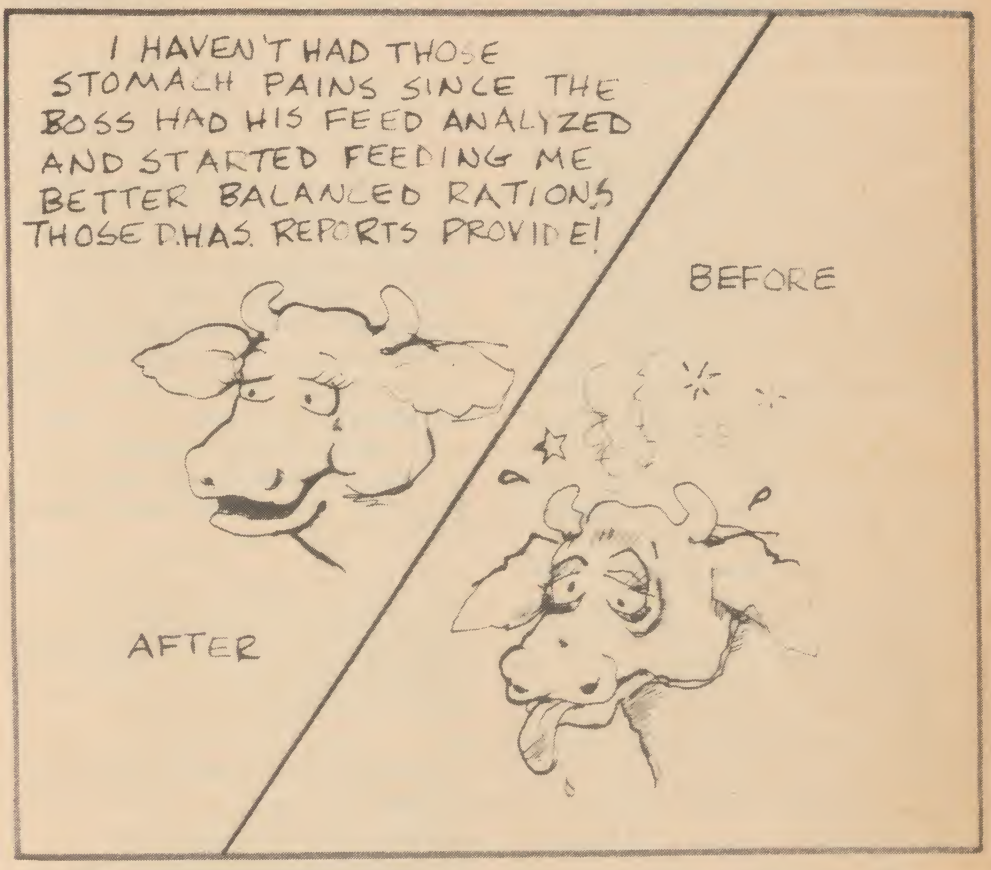
Dairy producers have been presented with a golden oppor to participate more actively in development and administrati these programs so that they m accurately reflect the desires producers. This opportunity sh be seized without fail.

Norman Campbell
Manager, DHAS

In keeping with our policy of freedom of expression, the opinions expressed are those of the author's and not necessarily of the Journa

Forage Quality and Milk Production

Professor Elliot Block
artment of Animal Science



ges provide 60 to 65 per cent of equired nutrients needed by cows and 80 to 90 per cent of equired nutrients needed by g dairy stock. With present ds in grain prices, we will have et a goal for forages to provide er cent of the required nutrients dairy cows by 1985 in order to ntain the profitability of dairy s. Thus, the importance of ge in feeding dairy cattle cannot veremphasized.

ntaining or up-grading forage ity can result in substantial ngs in grain feeding. For exam- it has been shown that an extra kg of grain was needed to ob- similar milk production on fa hay cut in full vesus early m. This amount of grain is about imes that needed to make up difference in total digestible ents (TDN) provided by the hay. t problems with forage quality lt from a lack of management, weather, equipment, or storage s. Stage of maturity at harvest is most important factor influenc- he feeding value of forages of pes. Forage analysis is not only ntial for balancing a ration but so a check on your managerial ties and can show where im- ement or help is needed. Your ge analysis is as critical an uation of your crop management ty as your herd average is of herd management ability.

ges contain from 35 to 85 per fibre. It is this high fibre along the nature of the fibre that icts the use of forage crops as nant feeds. Plant fibre consists llulose, hemicellulose, and n. Rumen bacteria are able to st the cellulose and icellulose of plant fibre and convert them to products that can be utilized as energy by the animal. The rumen bacteria cannot break down lignin. As forages mature, the amount of fibre, including lignin, increases. Additionally, as plants mature the lignin binds to and coats the other plant fibre components. Therefore, the fibre of mature plants is less digestible than younger plants due to greater quantities of lignin and lignin "protecting" the cellulose and hemicellulose from being digested. Table 1 shows the effect of maturity on cellulose, lignin, and TDN of alfalfa and timothy hays. In addition to energy decreasing as forages mature, protein also decreases, thus greatly increasing the need on many farms for grain with higher protein content.

Table 1. **Effect of forage maturity on fibre and energy content**

Forage	Maturity	Cellulose	Lignin	TDN
Alfalfa	early vegetative	23	7.6	65
	late vegetative	24	8.6	62
	early bloom	28	10.1	58
	mid bloom	29	10.8	56
	full bloom	30	11.6	54
	mature	32	12.4	52
Timothy	late vegetative	30	3.1	68
	early bloom	31	4.0	62
	mid bloom	32	5.5	58
	late bloom	32	7.0	55
	seed stage	34	11.0	51

Forages are used by ruminants primarily as a source of energy. Of the total energy available in forages only the digestible energy is usable. Some of this digestible energy is lost as gas during digestion, some is lost in urine production, and some is lost as heat during the digestion processes. The remaining energy is called the net energy of the forage that is available to meet the animal's needs for maintaining itself and for productive purposes. The efficiency with which net energy is utilized by the animal depends on whether the animal is using the energy for maintenance, milk production, or weight gain. Ruminants utilize feed energy most efficiently for maintenance and milk production, and least efficiently for weight gain. Figure 1 shows the effect of forage digestible energy percentage on efficiency of energy utilization for maintenance, milk production, and weight gain relative to that of corn grain (assuming corn grain energy is utilized 100 per cent). At 70 per cent digestibility forages are only 20 to 30 per cent less efficient than corn grain in meeting maintenance and production requirements. However, at 45 per cent digestibility forages are 60 to 95 per cent less efficient that corn grain in meeting maintenance and production requirements. This indicates that a higher quality forage can substantially save money spent on grain supplementation of lower quality, mature forages.

Animal productivity depends not only on the digestible energy content of a feed but also on the amount of feed consumed. In general, daily forage consumption increases as the digestible energy concentration of the forage increase. Because of the increase in daily forage consumption associated with an increase in the percentage of digestible energy,

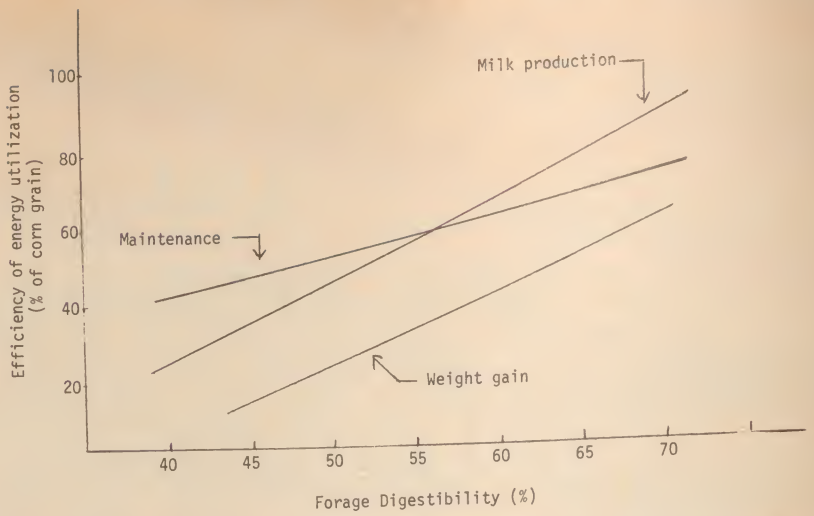


Figure 1. Relationship of forage digestibility on the efficiency of energy utilization from the forage by ruminants, compared to corn grain.

the daily consumption of digestible energy increases greatly with only a small or modest increase in forage digestibility. This means more milk production from the same amount of forage of higher quality. In fact, an increase from 55 to 65 per cent in the digestible energy of forages fed to lactating animals could result in an increase in milk production from 4.5 to 10 kg per day.

High quality forages can, therefore, increase energy intake and digestibility and decrease the quantity of grain supplemented to the forage for energy and protein.

Preparation or particle size also may influence the feeding value of forages. Too many silages and haylages are prepared either too coarse or too fine. Re-cutters or screens should not be used on silages or haylages made at recommended moisture levels. Such extra preparation should be used only for material that is below recommended levels of moisture to obtain improved packing and preservation. Set knives for 0.64 to 1.27 cm (1/4 to 1/2 inch) theoretical cut. Keep them sharpened and set up to the shea plate. Most silage particles should be about 0.95 to 1.91 cm (3/8 to 3 inch) long. If hay is prepared for in complete rations, put it through bale breaker, forage harvester, or 2.54 to 3.81 cm (1 to 1 1/2 inch) screen.

Forage that is too fine may be lo in digestibility, may fail to mainta milk-fat test, and may result in m digestive upsets if it is heavily fed Excessively coarse-chopped forag may result in abnormal fermenta and mould growth. This may lowe digestibility and intake, or adverse affect health.

Make certain that forages are use in a balanced ration. A lack of pr tein, phosphorus, magnesium, sulphur, or other nutrients may ap preciably lower digestibility of the entire ration, including forage.

It takes very little money to make major accomplishments in forage quality and the return on your inve ment will be phenomenal. All that needed is a keener sense of forag management.

PRODUCING QUALITY FORAGE

by Professor B.E. Coulman
Department of Plant Science

Surveys of the forage produced in a given region show a great variation in quality from farm to farm and from year to year on individual farms. Forage quality is affected very markedly by the management practices utilized. Thus, this article will focus on the production of high quality forage. The emphasis will be on perennial species rather than annual species such as corn.

Choice of Species

In the province of Quebec, eight forage species are commonly recommended: alfalfa, red clover white clover, birdsfoot trefoil, timothy, bromegrass, orchardgras and reed canarygrass. Forage seedings usually involve a mixture of species with timothy being by the most commonly utilized grass and alfalfa or red clover, the mos common legumes.

e species utilized on an individual
m is determined to a large extent
the purpose for which the forage
ntended (i.e., stored feed versus
sture) and characteristics (pH,
inage) of the area to be planted.
st of the above species will pro-
:e high quality forage if managed
l. At a given stage of growth,
vever, legume species are
erior in quality to grass species.
umes tend to be leafier than
sses and thus are higher in pro-
and most minerals. At early
ges of growth, grasses may be
digestible, or possibly more
estible than legumes, but their
estibility declines much faster
advancing maturity. By the
inning of flowering, digestibility
rass is lower than legumes. The
eriority of the quality of legume
ge is illustrated in Table 1.

s, for high quality forage, mix-
s should always include a
ume species.

ablishment

ages are more difficult to
blish than many other crop
cies. Small seeds and poor
dling vigour make many forages
susceptible to weed competi-
and environmental stresses in
establishment year. Many
ners use a cereal companion
o when establishing forages to
in weed control and to provide a
ater economic return in the
blishment year. However, some
ge species, such as alfalfa and
clover, can produce substantial
ds in the establishment year
n seeded early in the spring and
n weeds are chemically controll-
Thus it is important to know the
ity of the forage material pro-
ed in the year of establishment
er different systems of establish-
t.

cent study in Wisconsin examin-
different methods of establishing
fa and the quality of the forage
duced. The use of an oat compa-
crop produced a heavy crop of
hay but this hay was poor in
s of digestibility and animal in-
. Alfalfa seeded alone with no
icide treatment was badly in-
ed with weeds, but the alfalfa-
d hay was superior in quality to the oat hay. Alfalfa seeded alone with herbicide treatment produced a pure alfalfa hay giving the highest digestibility and intake. Thus, the method of establishment can greatly affect the quality of forage produced in the establishment year. Farmers should consider seedings without companion crops because of their better quality.

Fertilization

As with other types of crops, forages require good soil fertility to produce high yields of dry matter. The application of fertilizer, particularly nitrogen, to forage fields, can also substantially improve forage quality. The major effect of the addition of nitrogen is to improve the protein content of forage. However, nitrogen fertilization has little or no effect on digestibility. Table 2 illustrates the improvement of protein percentage with the addition of nitrogen. This increased protein means less money spent on protein concentrate in the ration.

Stage of Harvest

The major loss in feeding value of forage comes from harvesting at an advanced stage of maturity. As the forage plant matures it increases in size and thus in yield of dry matter. At later stages of maturity, however, the majority of this dry matter increase is of less digestible stems. The fibre content is increasing and the protein, digestibility, and minerals are decreasing. Thus, although a later cut puts more bales in the barn, this hay will not produce as much meat or milk as hay cut earlier. This is clearly illustrated by Table 3 which shows that animals consume more early maturity forage than forage at an advanced stage.

Thus to obtain the highest yield of **digestible** dry matter and protein, forage must be cut early. It is recommended that forage grasses be cut between the time of emerged heads and early flowering. Alfalfa should be cut when the first blooms appear, while red clover and birdsfoot trefoil are best cut from the stage of early to mid bloom. As well as producing quality forage, an early cut will allow the plant more time to regrow and thus a better yield at later cuts.

Method of Conservation

Although a forage producer may have the intention of cutting his crop early, often the weatherman does

Table 1 **Comparison of the quality of alfalfa and three grass species harvested at first flower (or beginning of anthesis)**

Species	Protein %	Digestible Dry Matter %
Alfalfa	18	67
Timothy	6	57
Bromegrass	7	55
Orchardgrass	8	60

Abstracted from Smith (1974) — Madison, Wisconsin.

Table 2. **Effect of nitrogen on the quality of bromegrass**

Nitrogen applied lb/ac	Crude Protein %	Total Digestible Nutrient %
25	7.5	58
125	12.5	58
225	17.5	60

Winch, J. University of Guelph.

Table 3. **Digestibility and intake of timothy at various stages of growth.**

Cutting Stage	Dry Matter Digestibility %	Dry Matter Intake % body weight
Vegetative	67.8	2.4
Boot	63.1	2.2
Heading	60.8	2.1
Flowering	52.2	1.8
Seed	46.9	1.3

Agriculture Canada Publ. 1640

not cooperate. The province of Quebec has a humid climate and rainfall is spread quite evenly throughout the growing season. Thus, prolonged periods of dry weather are infrequent and this makes the production of field cured hay a risky process. Rain leaches water soluble nutrients out of hay lying in the field. This leads to a loss in dry matter but, more important, it is mainly highly digestible constituents that are lost. In addition spoilage can occur which leads to further losses due to activities of microorganisms.

The recent trend in eastern Canada has been to conserve forage in a wet form — namely silage or haylage. In the production of silage, the forage is cut and directly stored or, if wilted silage or haylage is made, the cut forage remains in the field for only a short period of time. Thus, field losses are reduced. Even when dry hay is made, more farmers are using barn drying systems in an effort to reduce the period that cut hay remains in the field.

In silage systems field losses are reduced, but storage losses in the silo are usually higher. In the production of dry hay, as mentioned, field losses can be large but, if the hay is properly cured, storage losses are minimal. Figure 1 illustrates the magnitude of losses that occur, on the average, in forage production systems. The highest losses are usually with field cured hay while losses with haylage are the lowest. Thus, particularly in the humid conditions of eastern Canada, farmers should seriously consider the use of wet conservation systems, especially haylage or wilted silage. There is no sense in growing quality forage if much of it is lost by the time the animal gets a chance to consume it.

Spreading out the harvesting season

On farms where a large acreage of forage is grown it may not be possible to harvest all the forage at the optimum stage of maturity if the same species and cultivars are used in all fields. It is advantageous to plant smaller acreages of species of differing maturity to spread out the harvesting season. For example,

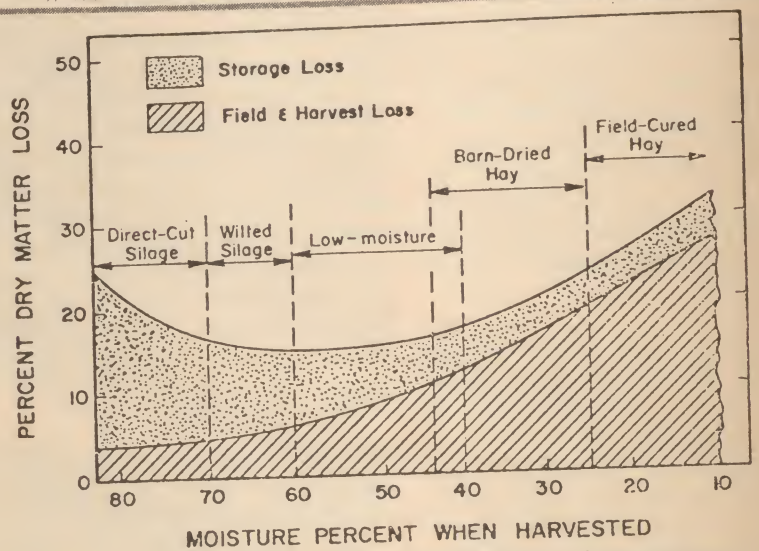


Figure 1. Estimated average field and storage losses in forage conservation systems (Hoglund, 1964).

four fields could be planted to species that would reach their best stage for cutting four or five days apart. Thus, the harvesting period would be spread out over 20 days. Table 4 shows four forage mixtures that could be utilized for this purpose.

Obviously, there are many areas where not all of the above species are well adapted. For some individual species, the harvesting season can be spread out by choosing the correct cultivars. For example, there is quite a wide variation in heading date among cultivars of timothy. By choosing very early cultivars like Richmond or Salvo, late ones such as Bounty, and mid season cultivars such as Climax, one can spread out the harvest season over 10-20 days, depending upon the year and location.

Conclusion

The consistent production of high quality forage is very dependent on the management practices utilized. Good management practices include: 1) the utilization of legume species whenever possible; 2) the use of nitrogen fertilizer to insure high yielding forage stands that are high in protein; 3) the use of several cultivars and/or species of differing maturity to spread out the harvesting season, and 4) the use of conservation systems that minimize nutrient losses in harvesting and storage.

Table 4. **Forage mixtures of varying maturity**

Maturity class	Species/cultivars
Very early	Orchardgrass, Early Alfalfa
Early-mid season	Bromegrass, Medium Alfalfa
Mid season	Mid season Timothy, Red Clover
Late	Late Timothy, Late Birdsfoot trefoil

MAKING QUALITY HAY

Professor E.R. Norris
epartment of Agricultural
ngineering

e bewildering array of machines
d machinery systems available for
ymaking has already been outlin-
in a previous article (Macdonald
urnal, March 1980). Regardless of
e system chosen, there is a period
the haymaking process during
ich events are almost entirely out
your control. Once the hay has
en cut, it is a matter of waiting for
o dry to a moisture content
table for either raking or
ackaging". During this time you
e entirely controlled by the whim
the weather, and anything that
n shorten this period is likely to
rease the amount of good quality
y which finally reaches the barn.

e quest for a system to increase
drying rate of hay is an old one.
dding machines for the purpose of
ffing the hay for better drying
ve been in existence since 1850.
ook another 100 years before the
xt machine in the form of the hay
nditioner came onto the market.
the present time, farm operators
ve a number of choices and
els of sophistication in hay condi-
ning machinery as well as a
mber of methods of operation of
se machines. It is the purpose of
s article to provide background in-
mation for intelligent choice and
e of this type of machinery.

in the leaves of the plants
ch are harvested for hay that the
or portion of the protein resides.
leaves of the plants are quite
and physiologically capable of
ng their moisture at a high rate.
refore the drying of the leaves is
a problem. In fact, some ex-
imental machines have been
eloped for the harvesting of
os like alfalfa by simply stripping
the leaves from the stems and allowing the plant to grow new leaves for further harvest. Haymaking as it is now practiced, however, is a process in which the entire plant is harvested. The stems of the hay plants are much thicker than the leaves and usually are surrounded by a waxy cuticle which impedes the flow of moisture out of the stem. For this reason, machines for conditioning hay have always had as their basic purpose the physical disruption of the surface of the stem to allow faster moisture movement. Hay conditioning machinery has been developed along four general principles — crushing, crimping, tedding, and maceration. The effects of these kinds of treatments have been the subject of a considerable amount of research extending back to the mid-1930s. The complexity of the drying problem is such that only partial answers to the questions are even now available.

First, the question of crushing versus crimping. Most studies in which crushing and crimping have been compared have shown an advantage for the crusher over the crimper. This seems logical, in that crimping machinery breaks the cuticle of the stem at intervals along the stem; therefore, the moisture which is to be removed must move an inch or two along the stem to escape. On the other hand, crushed stems have a physical break in the stem along its entire length. The results of various studies are not nearly so clear about the effects of different configurations of crushing rolls. At the present time, farmers are confronted with choices of ribbed rolls versus smooth rolls, combinations of ribbed and smooth rolls and different types of roll covering. Research has really not shown any significant difference among the various types of crushing rolls on the market. The claims by various manufacturers about the superiority of their particular roll design remain largely unsubstantiated.

The manufacturers of tedders would have us believe that fluffing the hay shortly after cutting it would speed the drying rate. Research, however, has not provided much support for this view. In fact, one study at Guelph showed that hay tedded immediately after mowing had drying characteristics quite similar to hay which was mowed and left unconditioned in the swath. It would seem that the tedder is probably still useful only as a tool to fluff the hay after it has been wetted down by rain.

Using a flail type mower in which the hay is cut and partially macerated by the mowing machine would seem to be a way of speeding moisture loss of the stems. In fact, however, the flail mower has generally shown no increase in drying rate over hay cut and left unconditioned in the swath. Also, the maceration of the plant by flail type mowers has contributed to increased loss of the leaves in subsequent operations. Research continues in various systems of conditioning hay which incorporate an element of maceration, but at this time there is no data to show any advantage for this system.

From the above discussion, it would seem that some type of crusher type conditioner is best for speeding the drying of hay. The question now becomes a matter of choice of machine. At the present time, the manufacturers of haying machinery are experiencing very healthy sales of the machine called the mower conditioner. This machine incorporates the two operations of cut-

ting and conditioning the hay into one compact, easy to manoeuvre unit. In addition, it has incorporated into it a rotating reel which aids in the cutting of lodged or tangled hay crops. The cost of a combined mower-conditioner is considerably greater than the cost of two separate machines. Whether to buy this type of machine is a decision which must be based on a number of factors, among which are economics, pride of ownership, and required capacity of machine. For the same width of cut, one can almost certainly expect a greater number of acres per hour cut by a mower conditioner as compared to a mower with a conditioner hooked behind. This is partly a function of the manoeuvrability and ease with which the mower conditioner handles lodged crops; however, this advantage can be decreased considerably by good maintenance of the cutter bar of a conventional mower. Many conventional mowers suffer from "benign neglect" in that the knife sections are not sharpened quite as often as they should be, the ledger plates are seldom if ever changed, and the hold-down clips and wear plates are seldom adjusted and/or replaced. The ability of the conventional mower to cut lodged or tangled crops can be enhanced considerably by a reasonable amount of preventive maintenance.

The drying rate advantages of the combined mower conditioner are completely nullified if the operator leaves the deflector plates at the rear of the machine in a position to form a windrow rather than letting the hay fall in a full width swath. Studies have shown that the drying rate of hay cut, conditioned and windrowed by a mower conditioner is the same as for hay cut and left unconditioned in the swath.

Other minor factors also have been shown to affect the drying rate of hay. Drying tests at Macdonald College in the early 1970s showed an increased drying rate for hay in windrows oriented perpendicular to the prevailing winds as compared to windrows running parallel to the prevailing winds. Therefore, if the field geometry allows it, it would be an advantage to cut and condition hay in windrows perpendicular to the prevailing winds.

Another factor which is not, as yet, well documented is the orientation of the stems within a windrow. Tests at Macdonald in the early 1970s indicated that for crops with a high percentage of leaves, a drying rate advantage was achieved by having the heads of the plant on the top of the windrow. The converse result was indicated for hay plants with a high percentage of stem material. This would seem to contradict the advertising claims of some mower-conditioner manufacturers who claim that the "stem-first" feeding of their conditioning rolls gives a drying rate advantage to their machine. This is a point which will bear some further research before conclusive results are available.

This brief discussion of the effects of various factors on the drying of hay indicates that the farmer is still very much at the whim of the weather. However, by judicious choice and careful operation of his machine he can increase his chances of harvesting a good quality hay crop.

Calving Difficulties

by Professor J.F. Hayes
Department of Animal Science

Dairy farmers have long been concerned about difficult calvings in their herds. In recent years, however, the incidence of difficult calvings has increased and dairy farmers have become interested in ways and means of over-coming or reducing the problem.

Why are difficult calvings a problem for dairy farmers? The answer is that they reduce profitability. Firstly, difficult calvings require assistance, leading to increased labour and veterinary costs. Secondly, there is evidence now that calves born in difficult calvings have reduced chances of survival. Referring to Table 1 we see that mortality at birth or in the 24 hours afterwards is seven to eight times greater in the case of calves born in difficult calvings (assistance, malpresentation, or surgery). Lastly, cows affected with dystocia yield less milk subsequently, are more prone to reproductive problems such as retained placentas, low conception rates, and long calving intervals.

Calving ease data have been recorded since September 1979 in herds enrolled in the DHAS program. Utilizing these data, we have made a preliminary study of calving problems in the Holstein breed. Some of the results are presented in Table 2. We see that 15 per cent of the calvings were classified as difficult in the case of first parities, compared with 4.8 per cent in the case

Table 1 — **Association between calf mortality and calving ease**

Calving category	1st parity %	1st parity (% Mortality)	2nd and later parities %	2nd and later parities (% Mortality)
Easy or slight assistance	85.2	(4.0)	95.2	(1.8)
Assistance required or malpresentation	13.5	(30.7)	4.6	(16.1)
Surgical	1.3	(31.1)	0.2	(41.1)

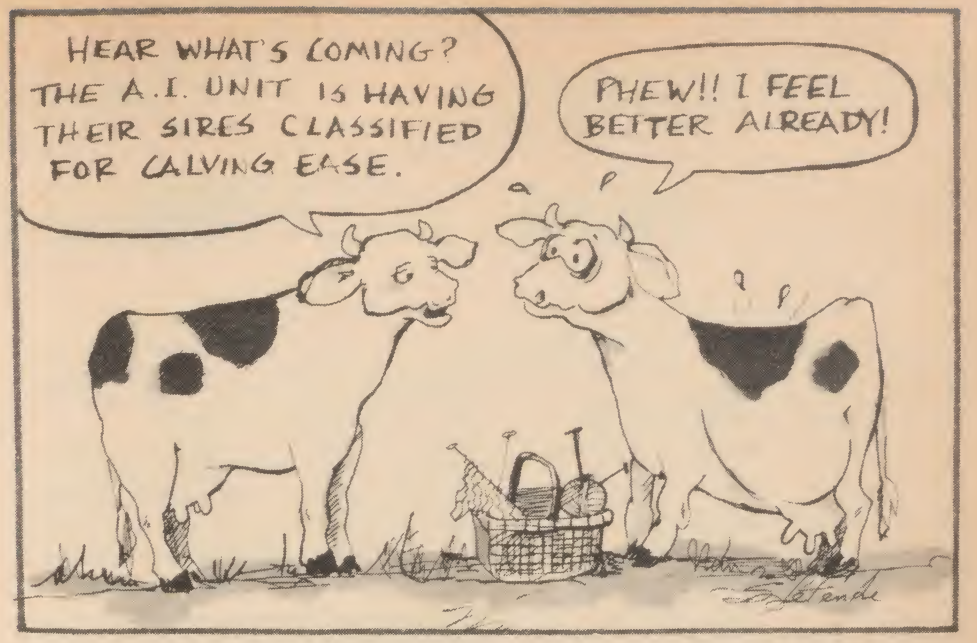
econd and later parities. refore all possible means should adopted to reduce the incidence lifficult calvings, especially in the e of heifers.

ong the major factors influencing tocia we found (a) age of the , her weight and pelvic size, (b) and size of the calf, and (c) tation length. We know that size ne calf and gestation length are ermined to some degree by etics; hence sire evaluation for ing ease may be one approach educing the incidence of tocia.

we evaluate our dairy sires with acceptable level of accuracy for ing ease? Studies so far indicate the heritability of calving ease bout 10 per cent, which is less half the heritability of milk d; though non genetic factors, efore, are very important causes ystocia, it is nevertheless possi- to evaluate sires accurately for ing ease provided we base our sions on a sufficiently large ber of observations. At the mo- t, it is generally agreed that a mum of 40 to 45 observations sire should suffice.

data on calving ease recorded erds on the DHAS program were to evaluate sires at the Hyacinthe AI Centre. The results 16 sires are presented in Table t the time the data were analyz- other sires at the AI Centre had fficient observations and are not rted here. Sires that rank highly those that had a very high entage of easy or unassisted ings; those that rank low down a very high percentage of dif- t calvings.

necessary to emphasize that e results were obtained within framework of an ongoing arch project aimed at identifying effective method of sire evalua- for calving ease; the results are iminary, therefore, and not nitive. In the near future, ever, all AI sires will be uated. It is likely that the sires be classified into groups on the s of the evaluation; a "superior" p of sires that will be recom- ded for mating to heifers and



cows that are known to be prone to calving difficulties, and an "inferior" group to be avoided in such cases. We are utilizing the information in a way that allows us to make "preventive" measures, rather than selecting directly against calving difficulties. If we were to select against calving difficulties directly, we would risk selecting simultaneously for small calves at birth, since calf size and calving difficulties are associated closely. There is evidence that sires without calving problems breed daughters that have calving problems themselves. Therefore, for the moment, sire evaluations for calving ease should be used when deciding on sires to mate to heifers and cows that are known to be prone to difficult calvings.

Collection of data on calving ease will lead to practical recommendations for producers, which should result in reduced incidence of difficult calvings and calf losses.

Table 2 — **Proportions of calvings in the various calving categories in DHAS herds**

Calving category	1st parity	2nd and later parities
	Proportion (%)	
Easy, without assistance	53.74	76.64
Slight assistance	25.43	20.56
Assistance	11.54	3.07
Surgical	1.29	0.22
Malpresentation	2.00	1.52
Number of calvings	4,254	12,367

Table 3 — **Sire evaluations for calving ease**

Sire	No. of Calvings	Calving ease	Rank	Index of milk
H-175 Telmatt	86	+5.50	1	+ 1
H-165 Pennant	126	+2.33	2	+ 8
H-149 Marock	63	+2.29	3	+ 2
H-150 Fleuve	76	+1.79	4	+ 3
H-145 Astronaut	255	+1.26	5	+11
H-138 Imperial	110	+0.93	6	+ 8
H-110 Duke	78	+0.91	7	+ 7
H-126 Klondike	47	+0.74	8	+19
H-154 Maridon	93	−0.03	9	+ 5
H-142 Perfection	61	−0.16	10	+ 7
H-162 Werrcroft	37	−0.46	11	+ 1
H-164 Make Rite	238	−0.60	12	+14
H-162 Esteem	92	−1.56	13	+10
H-137 Kennedy	35	−1.62	14	− 1
H-177 Tempo	92	−1.90	15	+14
H-144 Admiral	119	−3.00	16	+ 8

MILK PROTEIN

HOW VALUABLE IS IT?

by Professor K.F. Ng
Department of Animal Science

Milk, the liquid food secreted by the mammary gland for nourishment of the newly born, contains water, fat, protein, lactose, and minerals. The average gross composition of cow's milk is as follows: water, 87%; fat, 3.8%; lactose, 4.9%; protein, 3.5%, and minerals, 0.7%. Historically, dairy cattle have been selected for high total milk production and high fat content in their milk because of the economic importance of butter fat. This selection has been successful and the trend of herd averages over the last few decades in most countries where dairying is a major enterprise has been an increase of about one kilogram of fat per year. In Europe, there is a trend to place more emphasis on milk protein and even to price milk on the basis of protein content. Since 1957, the milk supplied to cheese factories in Holland has been paid for on the basis of both fat and protein content. More recently, Denmark, Poland, and Switzerland have followed the Dutch example. If protein is considered in the milk pricing system, dairy cattle breeders would undoubtedly strive to increase the protein portion of milk. There is enough evidence available to indicate that such a breeding and selection program could be successful.

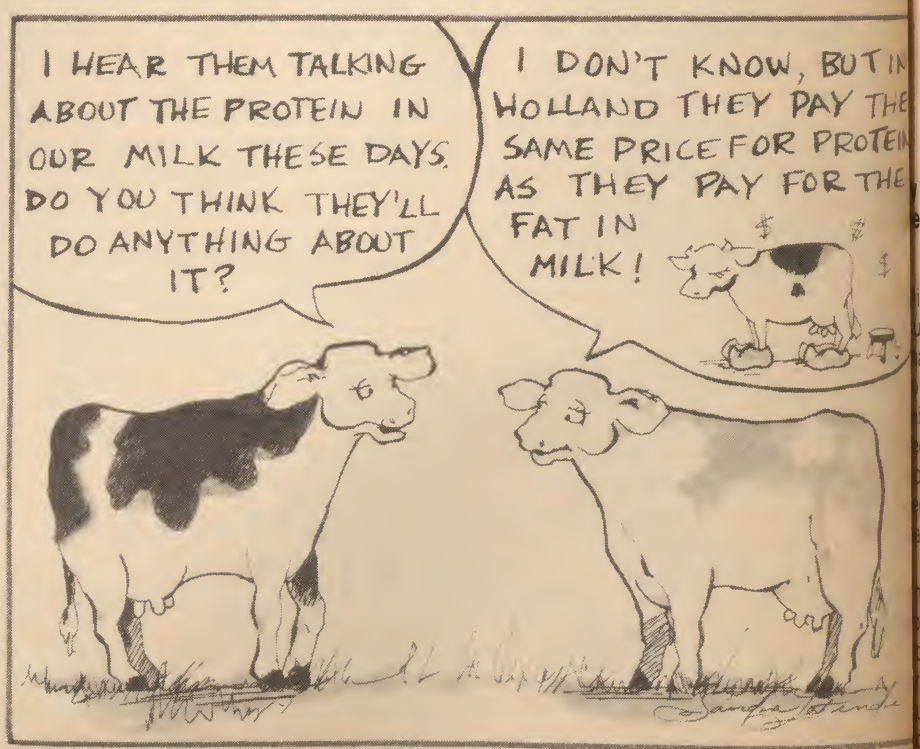
Milk protein is particularly important for its nutritional value. Milk protein consists of two groups of proteins, the caseins and the serum proteins. About 80 per cent of the milk protein is casein, but it can vary. The cheese maker is interested in the amount of casein present because it combines with the fat to form cheese curds. The serum proteins are lost in the whey. The major serum proteins are listed in Table 1. They have a high nutritional value in milk, but it is an expensive process to recover them from whey.

There is a complication in measuring milk protein. The protein content of milk is calculated from a nitrogen determination. Milk protein is about 15.67 per cent nitrogen. However, non-protein nitrogen (NPN) is normally present in small amounts and can vary. This means that milk protein content may be slightly overestimated. In spite of this, protein values will generally be more accurate than a fat analysis.

Breeding, nutrition, management, stage of lactation, season, age of cow, and health status are all factors that can influence the composition of milk. These factors may interact so that the relative proportion of the individual milk proteins vary. These variations have a profound effect on the properties of milk such as curdling properties, heat stability, viscosity, and cheese yielding capacity. It is important for the dairy industry to be aware that the protein composition of milk does vary. Th is particularly so in relation to the ratio of the various proteins whic shown in Table 1. The protein co tent of bulk milk can vary by as much as 1.5 per cent but, even more importantly, the individual components can show even grea variations eg., *B*-lactoglobulin, 0.19-0.39 per cent and casein, 2.2-3.4 per cent.

The different breeds of dairy cattl have been selected for many attributes for which each breed excels. The Holstein breed produce the highest yield of milk, while the Jersey has the highest percentag of components.

Within a breed, the dairy farmer selects the sires and dams from which to breed replacement stock for his herd. In recent years, the desirability of increasing the fat co tent of milk has been questioned. Nutritionists have been warning against diets containing too much fat. In constrast, the demand for



y products rich in protein has
n increasing. As a result of these
ds, selection goals for all cows
uld be toward milk with higher
ein content. For the purpose of
milk consumption, the distribu-
of milk protein between casein
milk serum proteins may not be
mportant factor. Milk used for
ese production, however, should
e a high casein content but be
in its serum protein and lactose
ent because the whey fraction
n under utilized byproduct of the
ese industry. At present, there is
ncentive for Canadian dairy
ers to increase the protein con-
of their product since protein is
ncluded in the pricing formula.

importance of protein content in
is clearly illustrated by the
wing example. Consider two
y herds A and B with 40 lac-
g cows each, an average an-
milk production of 6000 kg per
, a fat test of 3.6% and a dif-
nce in protein test of 0.5%
% vs 3.0%) as shown in Table
ur present payment scheme
ld not differentiate the milk bet-
n the two herds. No premium
be paid to herd A milk although

Table 1. **Variation in milk protein constituents of bulk milk**

Milk component	Concentration in milk (%)
Total protein	2.9 - 4.4
Casein	2.2 - 3.4
B-lactoglobulin	0.19 - 0.39
a-lactalbumin	0.12 - 0.14
Serum albumin	0.03 - 0.04
Immunoglubulins	0.06 - 0.09

Table 2. **Theoretical protein and cheese yield* of two herds with different protein tests.**

Herd	Kg milk	% fat	% protein	Kg protein	Cheese yield (%)	Kg cheese/ year/cow
A	6000	3.6	3.5	210	10.18	610.8
B	6000	3.6	3.0	180	9.52	571.2
Différence	0	0	0.5	30	0.66	39.6

*Calculated by the Van Slyke formula and assuming 78% casein in protein and 36% moisture in cheese

$$\text{Cheese yield} = \frac{(0.93 \text{ fat} + \text{casein} - 0.1) \times 1.09}{100 - \% \text{ moisture of cheese}}$$

it may be producing 1584 kg more cheese per year than herd B. If the milk is going into the fluid milk market, this means that the customer will benefit more from herd A, which provides an equivalent of 1200 kg more protein per year than herd B. The incorporation of a protein component in the milk payment scheme will have a great impact on the dairy industry.

Farmers will have the incentive to increase protein content of milk, and this will result in a milk of higher nutritive value. The present economic signals tell dairy farmers to breed for more water and fat in the milk. Higher protein in milk would increase dairy manufacturing yields and improve efficiency of operation.

Can we select for total milking time?

R.K. Moore
artment of Animal Science

ing represents a major labour in-
on a dairy farm. Thus, it is nor-
for a dairyman to look for ways
ncrease the efficiency of the
ing operation. Reducing the time
ired to milk the cows, while
tinuing to do the operation cor-
ly, will lead to a saving of the
yman's time.

management of the milking
ine and the condition and opera-
of the milking machine will
tly influence the total time re-
ed to milk the herd. The major
ion of the difference in the

average total milking time of cows in different herds is likely related to these factors. However, there may be occasions when we would wish to practise genetic selection for total milking time. The question then is: is it possible to evaluate sires for total milking time and to select for this trait? If so, by selecting for milking time, what effects might such selection have on milk and fat production and the health of the udder? Research has been conducted jointly by Macdonald College and the University of Guelph in an attempt to answer some of these questions.

There are a number of ways to measure milking speed. The total milking time measured by a stopwatch — time from the placing of the last teat cup until its removal — is the easiest to measure and the most important in terms of labour efficiency. Data collected at Macdonald for 2,235 Holstein cows from 72 herds in Quebec and Ontario indicated that the average total milking time per cow was 6.26 minutes, with 9.62 kg of milk being produced. Work at the University of Guelph with an additional 3,000 observations showed the total milking time to also average 6.2 minutes per cow.

The amount of milk produced during the first two minutes of milking is

also a measure of milking speed. Special equipment is available to measure this two-minute yield in kilograms. In Table 1, we can look at the total milking time, two-minute yield, and percentage of milk produced in two minutes for nine different levels of production at the observed milking. On average, over half of the milk was produced during the first two minutes of milking, with this percentage being 70.0 per cent for cows giving less than 5 kg of milk. This latter value suggests that, at least in this group, there may be a tendency to leave the milkers on too long.

The total milking time of a cow depends on the amount of milk that she is giving when the measurement is taken. Other factors which influence the milking time include the age of the cow, stage of lactation, and the herd in which the cow is milked. Thus, sires will be evaluated for total milking time by comparing the daughters of a sire within a herd and adjusting the observations for the other factors mentioned above.

A trait, such as milking time, is influenced both by environmental factors (including management) and genetic factors. The heritability of a trait measures the amount of genetic influence that exists for a trait and serves as an indicator of the ease with which we can manipulate a trait by selection. It can have a value between 0 and 1, and the higher the heritability value, the greater will be the response to selection. Milk yield has a heritability of 0.25, while total milking time in our studies has been shown to have a heritability between 0.15 and 0.20. Thus, we could select for total milking time, but our progress would not be as rapid as we see in selecting for milk yield.

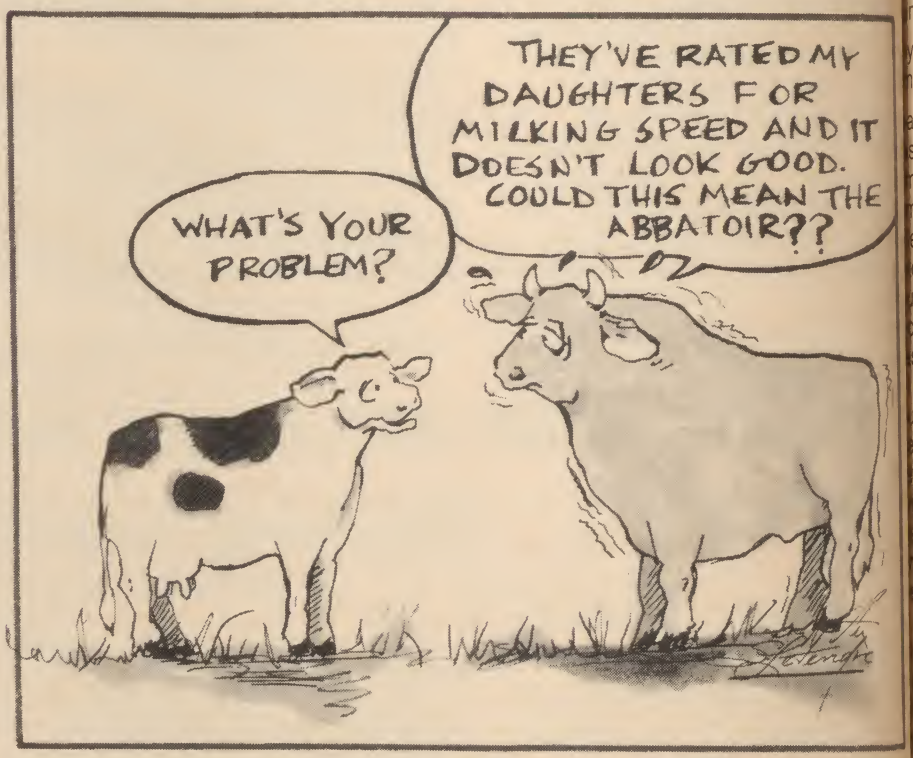
A genetic correlation attempts to measure the degree of genetic relationship between traits, which may be negative, positive or zero (–1 to + 1, with 0 indicating no relationship). Based on the data collected to date, the genetic correlation between total milking time and somatic cell count appears to be quite negative (–0.59). This suggests that the genetic potential for a reduced total milking time will usually be associated with a genetic potential for increased somatic cell count. In general, a higher somatic cell count in the milk suggests that there is more udder inflammation, although other factors may influence the number of somatic cells. Selection for reduced total milking time would probably not result in large increases in somatic cell count as the heritability of somatic cell count is low, this trait being largely controlled by management. Care must be taken, however, that any increase in somatic cell count would not offset the economic benefits of reduced milking time.

The genetic correlations estimated between total milking time and milk and fat production are moderately antagonistic. That is to say, in general, selecting for a reduction in the total milking time will be associated with a lowering of the genetic potential for 305-day milk and fat production.

As a result of these possible disadvantageous relationships between total milking time and lactation milk and fat production and somatic cell count, it appears that selection for reduced milking time may not be desirable. Rather, when sire proofs become available for total milking time, the information may best be used to carry out corrective mating on problem cows. A very slow-milking cow could be bred to a bull whose daughters milk more rapidly than average and vice-versa, with the choice of a bull for total milking time being made amongst the sires with the highest production proofs. In this way, it may be possible to develop more uniform milking cows that will better adapt to the milking routine.

Table 1. **Average Total Milking Time and Two-Minute Yield According to the Milk Production at the Test Milking**

Production Per Milking (kg)	Number of Observations	Two-Minute Yield (kg)	% of Milk Produced in Two Minutes	Total Milking Time (Minutes
< 3	38	1.64	69.2	4.73
3-5	185	2.92	70.0	4.80
5-7	379	4.05	65.1	5.26
7-9	482	4.70	58.1	5.77
9-11	432	5.07	50.8	6.44
11-13	307	5.61	46.8	6.77
13-15	216	5.76	41.5	7.58
15-17	121	6.22	40.0	8.21
> 17	75	6.92	35.6	8.82
Average	2235	4.84	50.3	6.26



Somatic (Leucocyte) Cell Counting and Udder Health

. B.R. Downey,
inarian, and Dr. J.E. Moxley,
tor, DHAS, and Professor,
rtment of Animal Science

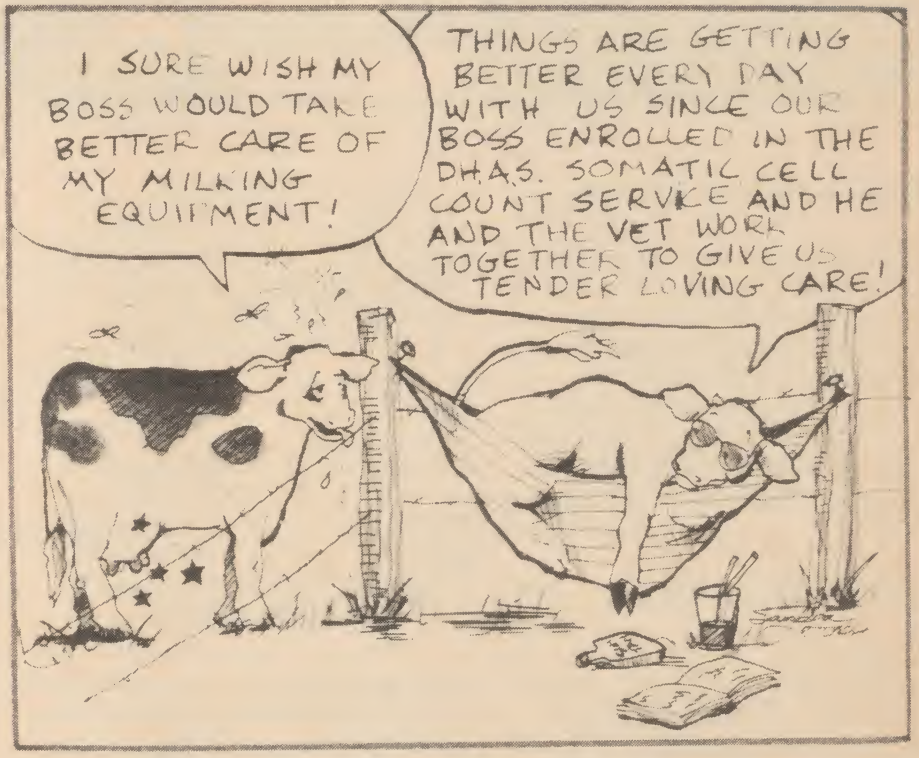
tic cell counting is the fastest
ng option in North American
ecording programs. In the
d States, milk samples of 1.4
n cows are checked for
tic cell counts each month. In
ec, 2,750 DHAS herds (100,000
were enrolled on the cell
service in December.

all the sudden interest in
tic cell counting?

y all methods of detecting
tis depend on estimating the
tic cell content of milk
les. These somatic cells (most-
cocytes or white blood cells)
the udder when it is irritated,
ly as a result of injury or a
rial infection. The California
itis Test (CMT) or other types of
dexes, a direct microscopic
t, the Catalase test, etc., are
to estimate cell counts, but
are time-consuming or expen-
o perform. It is only within the
five years that automated
tic cell counting equipment has
introduced into North America
se in milk recording programs.
equipment has made it possible
ovide dairymen with a somatic
counting service for individual
at a very reasonable cost.

are somatic cell counts useful
regular basis?

dairymen are familiar with
eria counts. High bacteria
ts are usually due to poor
ation, inadequate cooling, con-
nated water supplies, etc. A
rman can usually correct these
lems quickly and bacteria
ts will return to normal.
tic cell counts are different
always originate with the cow. A
grade infection can build up in a
and not be detected without
method of testing. Once an in-



fection builds up, it may take several months to eliminate the problem. A dairyman has to be continually checking to catch possible re-infections. A dairyman requires some form of regular testing to keep mastitis under control. With monthly cell counts, the dairyman and his veterinarian can work together to locate problems and take the necessary action.

DHAS provides a monthly report which gives the somatic cell counts for each cow over the past 12 months. As cows are put dry, the dairyman can review the status of each cow over the lactation and decide whether dry cow treatment should be given. Without the somatic cell count information, it is generally recommended that all cows should receive dry cow treatment. If a dairyman's report indicates that half of his cows do not require treatment, he has saved more than the cost of the somatic cell count service. In many cases, dry cow treatment is the best way of clearing up cows with a chronic mastitis problem.

A high somatic cell count is not necessarily an indication of mastitis. It usually indicates a problem in the herd which may result in a mastitis problem. Any udder irritation can cause the somatic cell count to rise suddenly. When cows are put out on pasture for the first time in the spring, the somatic cell count can triple simply as a result of the cows' sudden increased activity on pasture. If the milking machine becomes faulty, it can cause somatic cell counts to rise. If teat cup liners are not changed as frequently as they should be, udder irritation, an increase in somatic cell counts and mastitis may result. Even the injection of an antibiotic into an otherwise normal quarter can cause the somatic cell count to increase to counts of two million cells/ml of milk within 24 hours. While most dairymen can

(Continued on page 16)

The Family Farm

Published in the interests of the farmers of the province by the Quebec Department of Agriculture.

SAMPLING OF CATTLE FEED

The Dairy Cattle Committee of the Quebec Animal Production Council (sub-committees on nutrition and chemistry) has prepared a guide on the sampling of cattle feed. The complete document is in the final stages of preparation. Part of it is presented here and it summarizes the essential techniques of a good sampling.

Cattle Feed and Its Sampling

According to Mr. Jacques Jalbert, agronome in the animal production service, the precision of the results of the analysis of cattle feed depends in great part on the sample selected. The margin of error on the farm is very great compared to the margin of error observed in the laboratory. In fact, one kilogram of feed will supposedly represent a crop of 100 tonnes or more!

It is therefore of prime importance that the farmer himself does or at least participates in the sampling of the feeds. In fact, the confidence in the laboratory results will be based on the seriousness of the effort given to the sampling.

Bad sampling will result in errors that will be greater than the use of the tables of average values.

Here are the standards established in regard to the techniques of sampling:

Hay

Regardless of the number of samples which will be sent to the laboratory, each of them must be taken from at least 10 different bales which are sufficiently distant from each other to reflect adequately the variation in this lot of hay. It is vital that a hay probe be used such as that used by the personnel of the Department of Agriculture, Fisheries, and Food of Quebec, as well as most of the companies who are working in this field. Buying one will probably be the ideal solution ($50-$75). Sending a half a bale of hay to a laboratory is a ridiculous and unacceptable situation.

The composition of hay varies little in storage. Sampling, therefore, can be done at harvest; in the case of hay that is placed in a drier, sampling at harvest can also be done on the condition that it is allowed to dry before closing the bag(s) to avoid moulding and the accompanying biochemical changes.

The identification of the sample is also of prime importance; the percentage of legumes as well as the date of cutting are essential for the laboratory in order to categorize the sample and to make the necessary estimates.

Silage

Silages may also be sampled at harvest time. In fact, fermentation has little effect on the chemical constituents of silages which are made under good conditions. By this, it means silages containing 30 to 45 per cent dry matter (55-70 per cent moisture). More humid silages will undergo considerable losses by leakage; the drier silages may see an important part of the protein made unavailable to the animals because of excessive heating. Therefore, if the sample taken at harvest contains less than 30 per cent or more than 45 per cent of matter, a sample of fermented silage should preferably be analyzed.

The sample of silage must be representative of the silo.

Many handfuls taken at irregular tervals will help. Cool down or freeze these samples and send them preferably at the beginning the week in order to facilitate the arrival at the laboratory before th end of the week.

If the sampling is done on fermen material, avoid the upper part of silo. Take some material which h just been taken out of the silo; fo the silage of very dry hay (more than 45 per cent dry matter), it m be useful to ask for an analysis o the available protein.

The samples of fresh or fermente silage must be placed in plastic bags; squeeze the silage well and expel the air from the bag before closing. Refrigerate or freeze bef shipping.

Grain

A grain probe is desirable but not despensible. The quantity taken should be from 0.5 to 1 kilogram. Think of the variety of the sample. Fill out the identification form properly as to the material and the p ducer.

RHEA IN CALVES LESS THAN AYS OLD

hea in calves less than 30 days one of the main causes of s sustained by the dairy or beef ıcer. The problem is all the important in large enterprises. ı complex problem and the es of individual treatment can high as 30 per cent, even if eatment is elaborate. These are taken from a talk given by erge Larivière, Associate Dean search of the Faculty of inary Medicine at the Universi- Montreal, during a farmers' last November.

diarrhea can be caused by dif- t pathogens, but the resistance e individual, the environment, he management are also im- nt factors to consider.

ecognized today that a variety thogenic organisms may be nsible for diarrhea, but it can ıused or aggrevated by pro- s at the level of feeding and s often the first cause to nate.

hea from Feeding

problems of feeding new-borns enerally translated into diar- Often this diarrhea is the t of the production of harmful tances by normal organisms present in the in- e, using nutritive elements n accumulate in the intestine ving feeding troubles.

Feeding Errors

cess of milk: During the first o three days of life, one should the equivalent of seven per of the weight in milk or five per colostrum and that in four or neals per day; then 10 per cent veight in milk and decreasing essively the number of meals o per day;

b) drinking milk at an inadequate temperature: milk must be fed lukewarm;

c) regularity of feeding; feeding should be done at regular intervals and by the same person;

d) bad choice of milk substitutes: substitutes for replacement calves and substitutes for heavy calves; starter substitutes and substitutes for calves more than three weeks old;

e) poor feeding plan;

f) poor preparation of the substitute.

Treatment

No treatment is necessary if the calf remains alert, drinks normally, and if its manure is only pasty or slightly more liquidy than normal, unless similar cases in the herd had previously evolved to a more serious diarrhea.

The treatment in the more serious cases entails:

1. isolation of the sick calves from the rest of the herd;

2. modification of the diet;

3. replacement of the electrolyte losses;

4. use of antibiotics and immunoglobulins;

5. protection of intestinal mucosa.

Isolation of the Sick Calves

As soon as a calf has diarrhea, it should be placed in isolation from the rest of the animals. The use of a disinfectant to eliminate any contact between the sick calves and the healthy ones is of primary importance — disinfection of boots, utensils, etc. The sick calves must be kept in a dry and warm place.

Modification of Diet

Since in most cases of diarrhea, the digestive and/or absorbtive capacity of the intestinal tract is decreased, it is important to reduce or even eliminate completely the milk offered to the calf. It is generally recommended that milk be replaced by a solution of electolytes, amino acids, and glucose. These solutions, in addition to supplying energy in a form which is easily assimilated, serve to replace the electrolytes which are lost by diarrhea. It should be noted that these solutions do not meet all the requirements of the animal and that an additional source of energy must be supplied after two days of treatment.

Replacement of the Electrolyte Losses

If the sick calves are not dehydrated to the point that their eyes are deep in their sockets and their extremities are cold, the giving by mouth of electrolyte-amino acid-glucose solutions would be sufficient to replace the electrolyte losses. With the help of a bottle equipped with a nipple, the equivalent of three to four per cent of body weight is given every six to eight hours. When the consistency of the feces has improved, a return to the regular diet is done gradually. For this, one can mix equal parts of milk and the electrolyte solution and feed the calves with this cut milk for two to three meals. If the calf is seriously dehydrated, one must call the veterinarian who will use injectible electrolyte solutions which are essential to the survival of calves so dehydrated.

Antibiotics and Immunoglobulins

Even though it is questioned, it is more and more evident that the use of antibiotics to eliminate diarrhea must be limited. With the exception of diarrhea caused by Cryptosporidium, which can be effectively treated with sulphonamides, given

orally, antibiotics have little place in the treatment of diarrhea. In certain cases, it may be advantageous, however, to use an antibiotic to control diarrhea caused by coliform organisms; in these latter cases, the use of polymyxin B would be preferable.

Research carried out recently in our laboratories has demonstrated that the addition of an immune serum (immunoglobulins) to milk will eliminate rapidly a diarrhea that is caused by coliforms.

Protection of the Intestinal Mucosa

The use of medication based on kaolin and pectin for the treatmen of diarrhea is very widespread; bu is still uncertain if such medicatio has a beneficail effect. Even thou it may seem paradoxical, any effc to reduce the intestinal motility is contra-indicated in intestinal distu bances.

(Continued from Page 13)

detect faulty milking machines, the monthly cell counts provide a double check on equipment and milking practices.

In 1979 a study of 35 herds with over 7,000 kilograms of milk per cow per year was made. The average cell count was 280,000 cells/ml of milk compared to 359,000 cells/ml of milk for contemporary herds with average production.

In another analysis, herds with cell counts below 200,000 cells/ml earned $218/cow per year more than herds over 700,000 cells/ml of milk. This corresponds to studies in England. A reduction in cell counts is associated with good herd management practices.

Reducing somatic cell counts is a slow process. Two hundred and fifty herds have been on the cell count service continuously for four years. Their annual averages are listed below:

Average Cell Counts of Herds on Continuous Cell Count Service

Year	Average Cell Count 000/ml of Milk
1977	400
1978	347
1979	285
1980	267

Once a herd drops below 300,000 cells/ml of milk, further progress is likely to be slow. Somatic cells are a natural protective mechanism that the cow has to combat bacterial infections. Cell counts are naturally high in early lactation and rise again as the cow approaches the drying off period.

The first step in solving your mastitis problem is in having the somatic cell count reports to help locate the causes of mastitis in your herd and then using this information, in cooperation with your veterinarian, to take corrective action.

The provincial veterinary service available to help you solve your u der health problems. They can be contacted through their regional o fices listed here.

Addresses for Veterinary Service

Région	Regional Office	Name of Veterinarian
1	337, Moreault St., Rimouski, G5L 1P4 418-723-7818	Benoît Dumas
2	2700 Laurier Blvd., Ste-Foy, G1V 2L8 643-2400	Denis Blondin
3	Edifice Verdier C.P. 459 St-Joseph Beauce G0S 2V0 418-397-6825	Michel Blouin
4	460 Louis Fréchette Blvd., C.P. 1090 Nicolet J0G 1E0 819-293-2133	Marcel Benoît
5	4260 Bourque Blvd., Rock Forest J0B 2J0 819-563-7080	Gilles Rivard
6	3230 Sicotte, St., C.P. 40 St-Hyacinthe J2S 7B2 514-773-3924	
	— Bagot County 3100, Laframboise St-Hyacinthe J2S 4Z4	Jérôme Sasard
	— Missisquoi County 9 Dupont St., Bedford, J0J 1A0	Raymond Brault
	— Richelieu County 101 Du Roi St., Sorel J3P 4N1	Jean Desrochers
7	187, Boileau St., C.P. 120 Châteauguay-Centre J6J 4Z4 514-692-8288	Jean Mauffette
8	390, Principale St., Buckingham, J8L 2G7 819-986-8541	Roger Danault
9	180 Rideau Blvd., Noranda J9X 1N9 819-764-3287	Raymond Major
10	867 L'Ange Gardien Blvd., L'Assomption J0K 1G0 514-589-5781	Jean-Guy Brousseau Paul Perras
11	91 St-Louis Blvd., Cap-de-la-Madeleine G8T 1E5 819-375-4761	Dr. Lessard
12	801, Ch. Pont-de-Taché Nord Alma G8B 5W2 418-668-2371	Réal Perreault

his Month ith the QWI

aventure Happenings

orts of meetings have been sent e local papers and notices of oming events have been an- nced on the radio. Flowers were hased for a local cemetary. All ches faithfully collected Pennies riendship. Members worked at t shop at Soldier's Memorial ital and at the fair. A white tree was planted by one ch, this tree to be known as the ee. Two branches donated to erry Fox Fund. One branch en- d an outing to Gaspe, and ed Perce with a tour of the t House. One branch assisted ercles des Fermières with a Anniversary celebration of a ed priest in the area. A mohair v was given to a life member. ations were made to CanSave, CWW Flag Tour, and to a local w on the tragic death of her A bursary was given to a local ent.

olastic Awards Banquet

e again I had the pleasure of at- ing the Scholastic Awards Ban- at Macdonald on November 6 of presenting the three Quebec nen's Institute awards. This is vening that one looks forward social hour is always held ious to the banquet where the rs, recipients, and the Mac- ld Faculty have the privilege of oming acquainted.

wing a delicious buffet dinner, awards were presented with Pro- or R.S. Broughton as Chairman. L. E. Lloyd welcomed yone and congratulated the win- .

year the Mrs. Alfred Watt norial prize was awarded to Miss Rich of St. Armand. She is in inal year of her B.Sc. (Food nce) program and is majoring in Nutrition. She has a cumulative grade point average of 3.79 out of a possible 4.00, and is a Faculty Scholar.

The Frederica Campbell MacFarlane prize was awarded to Miss Lise Levesque of Sherbrooke. Miss Levesque is a student in the final year of the B.Sc. (Food Science) program and is majoring in Dietetics.

The Quebec Women's Institutes Bursary in the Diploma Program was awarded to Mr. Darwin Smith of Shawville. Darwin is in the first year of this program. This was an added pleasure for me as I have known Darwin all of his life as his home is within miles of mine.

I wish to congratulate these young people. As the Chairman said in his remarks. "This is just the gateway to better things."

Mrs. W. Kilgour
QWI President.

60th Anniversary Celebrations for Gore

The Gore WI met on October 14 at the home of the President, Mrs. R. Duffy, to celebrate the 60th Anniversary of this branch. A delicious dinner was served to 13 members and guests including Mrs. S. Parker, QWI First Vice-President, and Mrs. Lucy French, QWI 3rd Vice-President.

After the dinner the President opened the business meeting with the Collect and the motto for the month was, "Many things are taken for granted that should be taken with gratitude." The roll call was "Name the biggest bargain you ever got." Among other business it was moved to donate money to the Quebec Service Fund, Quebec Extension Fund, UNICEF, and UNESCO. After the adjournment of the business meeting, Muriel Duffy welcomed the county President, Mrs. Shirley Johnston, and representatives from the other branches. A delicious birthday cake, made and decorated by Mrs. Potts, was served with ice cream, tea, and coffee. Mrs. Lucy French gave an interesting talk on CanSave, explaining the work that this organization does and the need for money. Wool is no longer provided as they can spend the money to better advantage. She was thanked by Audrey Miller and presented with a gift. Mrs. S. Parker congratulated the branch on the 60th anniversary and expressed thanks for being invited. She mentioned that all groups need new members and hoped we might find ways to encourage younger women to join. She was thanked by Ruth Mountain and given a gift in appreciation of her coming to be with us.

Joyce Husk was asked to review our branch history, recalling many amusing incidents saying our meetings were never dull. This branch had originally been formed as a sewing circle — the purpose being to provide clothes for needy families in the area. In the autumn of 1920 Miss Roach, then superintendent of Quebec WI, and Miss Poole, WI demonstrator from Macdonald College, attended the meeting at the home of Mrs. Finley Nixon and there the Gore WI was organized with Mrs. Wesley Lyster as President, Mrs. Kenneth Cook, Secretary, and Mrs. Fred Walker, Treasurer. Our membership has varied from nine members to 24, with 15 as our present enrolment. Like all other WI branches, we have been active in many ways and have supported various worth while projects. This was summed up in a poem which was composed and read by our Past President Ruth Morrison.

As we thanked our hostesses and the others who had assisted and expressed our appreciation to our guests who had shared our day with us, we agreed, "Happiness adds and multiplies as we divide with others."

QWI Booth at Plowing Matches

The Canadian and Provincial Plowing Matches, held at Macdonald College September 10 to 13 afforded the Quebec Women's Institutes an opportunity to meet the public and at the same time provide a service.

At a canteen located in a corner of the Macdonald tent, members dispensed coffee, doughnuts, and muffins for a moderate price. The ladies arrived on the scene with a steaming urn of coffee ready to greet the early plowmen and stayed until late in the afternoon.

Tables and chairs provided a spot for relaxation over a cup of hot coffee to competitors, judges, and visitors alike. Viewpoints were exchanged with participants from across Canada as several provinces were represented.

The booth, organized by Mrs. Lucy French, was manned by the QWI Executive assisted by members from West Island and Rawdon branches. The homemade doughnuts came from the kitchen of Mrs. Esther Cavanagh.

The QWI appreciates the space allowed us in the "special 75th Anniversary" tent and the help given by Norman Campbell and his colleagues. Members of the Executive are also grateful to Hazel Clarke, who provided a home base for those of us from a distance as well as being on hand when business was brisk.

In spare moments the ladies were able to visit the plowing fields to witness some excellent plowing, to view the exhibits of farm machinery, fertilizers, seeds, etc., and to enjoy the displays in the Macdonald tent and the Quebec Agriculture demonstrations for ladies.

Mrs. S. Parker
QWI 1st Vice President

Garden Party

Ascot gave a garden party with over 100 in attendance. The tea tables were loaded with assorted sandwiches, an amazing variety of cookies, cakes, and squares. The handicraft, food, and white elephant tables were well patronized. Among those present we were pleased to note: Miss Hazel Clarke, Editor of the Macdonald Journal who was on holidays in the area, Mrs. Mary Blaikie, an Ascot WI member now living in Montreal, Mrs. Myrtle Lane of Lennoxville, and Miss Edna Sm QWI Past President. So much ha shaking and visiting was a pleasu to watch. Miss Smith drew the lu number on the beautiful quilt mad and donated by the Treasurer, M H. Little. Mrs. McMullen, Lennox ville, was the winner. Mrs. D. An nesley, President, thanked Mr. an Mrs. E. Marlin for allowing them use of their house and beautiful grounds for this event. A hearty handclap was accorded this generous couple.

Helen Henry (centre, holding certificate) was honoured at a special Huntingdon meeting at which she was presented with a Life Membership. Left to right: Claire Forrester, Ruth von Brentani, Jean Tully, Joan Rottensten, Mildred Ottney, Thelma Buddo, Helen Henry, Doris Ryan, Anna Rutherford, Florence Reid, Martha Currie, Lilias Champion, and Mary McConomy

Dear WI Members:
A whole year has gone, and we sit in our rooms near the window to look out on the majestic celestial body warming up our earth to make us feel better. The iron grip of winter makes our hands shudder, but in those hands we hold the new see catalogue and we know that soon we will use all the little packages ordered from it, first at the windo sill and a month later in the garde or field and spring will be here.

ember and December were par-
larly busy months for helping
ds and the ladies of all branches
ur 20 counties gave uncounted
s working, visiting, decorating,
ecting, writing and buying
nited numbers of presents to br-
warmth, love, and joy to other
an beings.

neer decided to support The
ctrum of the High School with a
ation and voted to give an addi-
al prize to a 4-H member. Mr.
Mrs. Arnold Parker were con-
ulated for being honoured as
and Woman of the Year by the
l 4-H Club.

ntier's Jean Swail told of the
d of some work material for the
lren in the Rosemere Home, so
ver collection was taken up.
McAndrew attended the board
ting in October and gave a
rt on the business. Alida Witham,
Citizenship Convener, introduced
and Mrs. Geo Conelly who took
adies via slides this time to Por-
l. Mr. Conelly commented on
slide and told of the country's
ry. Agriculture makes up 30 per
of its industry, but most farms
quite small and the work is done
airly primitive methods. There
pictures of palaces, fortresses,
Roman aqueducts, vineries,
s, terraced fields, fig and al-
d orchards and many others.
found the people to be honest,
ting and friendly, with a very
urried atmosphere. Members
had fun with "What not to give
t Bessie for Christmas."

nville is quite a busy group.
e of the ladies brought in bot-
of home-grown savory and sold
n to the members to make
ey for the branch. Another
nber sold cards, etc., and
ated the profits to the bank ac-
nt. They also brought in yard
ds to be sent to CanSave, and
les, jam, and a Christmas pre-
for the St. Philippe Home.

nbers at **Brownsburg** were
ked for working so hard to make
handicraft tea and sale a great
cess. A new book of poems by
rey Dean Cowan, a former
nber who has left the area, was
lisplay. Once more a jar of "pen-
" was received from Pat and Sidney Seary, a continuing memorial to Mrs. Gertrude Seary. Mr. and Mrs. George Connelly share their summer trip with the members by showing slides. The journey began with several weeks in England and Scotland, were they felt the highlight for them was the Hebrides. Later they moved on to the Continent where they attended the Oberammergau Passion Play in Germany. This was a most moving experience as the pictures clearly showed, and as it was described by the Connellys. There were also beautiful scenes of other parts of Germany and Austrai. A motion was made that the Secretary should write to the Brownsburg City Council with the suggestion that the Council and interested organizations should meet and discuss the possibility of transforming the former Brownsburg High School into a home for senior citizens. Mrs. Ruby MacAdam was honoured with the presentation of a 50-year pin, which she graciously accepted.

Arundel's ladies chose a motto with which I entirely agree: "It takes 23 muscles to frown and only 13 to smile." So why overwork? Education Convener, Hazel Thomas, reported on a meeting in St. Jerome re the closing of the municipal libraries in this area. She passed on the suggestion of sending further petitions to keep the libraries open. Health and Welfare Convener, Agatha Ralph, reminded members that the control of high blood pressure is a lifetime job. It is easily diagnosed but less easily kept under control.

Jerusalem-Bethany's motto: "The keynote of a good citizen is service to others" was very eloquently commented on by the Citizenship Convener, Mrs. Evans. She said that it is by our actions and what we do that really counts. She cited the late Mrs. Bulley of the Arundel WI as an example locally. This lady did so much for her community by giving unselfishly to her local WI, and her church, not to mention the many thoughtful ways she remembered her friends and neighbours. Next Mrs. Evans named Terry Fox on the national scale with his Marathon of Hope. Internationally she mentioned Miss Anne Pollock, a local lady, who is working in Pakistan as a missionary and she introduced Miss Pollock as guest speaker. With the aid of beautiful slides and a most interesting commentary, all the members learned much about Pakistan, its climate, the people, the food and, most particularly, the way of life. Tribal beliefs and customs still rule their lives. A middle class of people is non-existent, there are only rich and poor.

Marcil's Agriculture Convener, Louise Wright, reported on her five colonies of bees which produced 400 pounds of honey this past year. Education Convener, Bertha Hayes, told the audience of her visit to pre-kindergarten and kindergarten classes in Montreal; the Health and Welfare Convener, Anne Nadeau, spoke about the dangers of certain drugs believed to be cancer causing. Sheila and Nikki Clinton displayed a guilt and a centrepiece made by the tribes people in Laos. Both handicrafts were entirely hand-sewn and were exquisite. On the occasion of a party for 95 children of the Shigawake-Port Daniel School, youngsters collected $385.95 for UNICEF.

Members were reminded in **Sutton** that the voting lists were being prepared and to make sure their names were on correctly. **Austin**'s guest speaker was Mrs. K. Milne, chairperson of the Memphremagog Library in Magog, which the Austin WI started and continues to support. Mrs. Milne told the members that a grant had been received for the Library. They are thankful for the two dedicated librarians and the several volunteers who have done part-time work over the years. The Education Convener, Mrs. C. Gillick, reported that two $100 bursaries had been given out. Brome County President, Mrs. O. Carr, visited the branch and spoke on the various competitions that are coming up. Mrs. Carr read a letter of thanks from Linda Bresee, who was the winner of the Brome County WI Trophy, which is awarded for the most points in the cooking section at Brome Fair. This is the third year that Linda has won. **South Bolton** has been fixing up their hall and making it pretty for the convention in April when this branch is the hostess.

The building of a new wing on the Barrie Memorial Hospital keeps all the people in Chateauguay-Huntingdon on the move. Cam-

paigns were held by various groups, and **Ormstown**'s member W. Hooker went to all the branches in her county to ask for help. Ormstown donated $200. Elementary school teachers were entertained at the branch's annual afternoon tea and discussions were in both English and French. **Howick** donated $500 to the hospital campaign. Mr. John Poupart spoke on his background and of the history of the hospital, and the ladies organized a bring-and-buy food and crafts sale. **Franklin Centre** made and raffled an afghan with $200 given to the Terry Fox Fund. The guest speaker at **Aubrey-Riverfield** was Nurse Bernice Angell. Her theme was "A day on the third floor in the Barrie Memorial" which, she said, can be both cheerful and frustrating.

Dewittville had a demonstration of crafts. The members were shown hair pin lace, rug hooking with pure wool yarn, items made from Bakers Clay for reusable Christmas decorations, corn husk dolls, a Christmas wreath of cones and nuts wired to a florist's wreath then sprayed with varnish, and rice and silk paper lampshades. Mrs. Fife spoke on Fiji where she and her husband spent five years. She showed slides and scenes around Suve, the capital.

Hemmingford's Mrs. Lev told her audience about Dutch Christmas customs. Children receive their gifts around the beginning of December and Christmas is still more of a religious celebration. The Dutch give each other banket letters — initials made of flaky pastry with a sweet almond filling. Large ones are made for the family and small ones for individuals.

East Clifton made a donation to UNICEF and gave $10 for prizes for games for the children's party after the collection. **East Angus** also collected money for UNICEF. **Sawyerville** ladies gave a shower of fruits, jellies, and pickles for the second Mile Senior Citizens Home.

Wright's Publicity Convener, Mrs. Fletcher Payne, introduced at the first meeting in the new Municipal Hall, Mr. Robert Dwinn, a former teacher of the Queen Elizabeth School in Kazabazua. He spent several years teaching the Eskimos and showed slides, explaining the working conditions in the North.

Inverness treated children at a party after they collected $98 for UNICEF. They also donated $55 to the Butters Foundation. **Kinnear's Mills** treated the children to a hot supper before they collected for UNICEF.

Mississquoi County always likes to arrange their daily life with a good motto. **Cowansville**: "The groundwork of all happiness is health." Mrs. Rodney Jenne explained how to make a clove-studded pomander. **Stanbridge East** chose the motto: "Keep making new friends as you travel through life so you won't be left alone." They reported making many donations and Harriet Ethler, Health and Welfare Convener, reported on a one-day conference sponsored by the Red Cross. She learned that many services are available such as blood donor clinics, course for training as baby sitters, fitness programs for seniors, wheelchairs, walkers, etc., are also available.

Dunham's Publicity Convener, Mrs. Dorothy Clark, held a word contest. Taking the letters from Quebec Women's Institute, create as many words as possible. The winner found 50 words. President Barbara Harvey closed the Christmas meeting with this thought, "When love adorns a home, other decorations are secondary."

Fordyce ladies showed a fine collection of hand-made Christmas decorations. A silent auction took place and the proceeds went to the Tiny Tim Fund. Each member donated $2 to be sent to the Hereos Memorial School for hot lunches for needy families.

Richmond Young Women rewarded those of their members who had perfect attendance for the past year with a cup and saucer. Many activities have taken place, including a tour of an old house in the area, a visit to a greenhouse, and a social evening with all branches in the area being invited.

Melbourne Ridge made gifts for the forgotten patients at the Douglas and a donation was sent to the Salvation Army. Samples of handicrafts that members were working on were brought in for display. A handicraft display is planned for each month.

At **Richmond Hill**, the County P- dent, Mrs. K. Johnston, and Ship and Spooner Pond were invited; games were played and a good was had. A large box of clothing was sent to the Dixville Home, a quilt blocks were handed in to be made into a quilt for a family wh lost their home by fire. **Denison Mills** had a table at a flea marke and raised $60 for the Dixville H and collected $200 during the cancer campaign. **Cleveland**'s Evelyn Saffin, Vi Hull, Pat Brosco and Rita Olney met with membe the A.D.S. School for a worksho plan a Spring Fling. There will be kinds of classes for the children enter, class projects and display

Education Convener, Mrs. Georg Gibb, of **Abbotsford** reminded th members that 1981 is the Interna tional Year of Disabled Persons. purpose of the year is to promote the full participation of disabled p sons in the social life and in the development of the society in wh they live.

Granby Hill's roll call was to na household products which are poisonous. The Home Economics Convener mentioned that gilt fra pictures can be relustered by rub ing them with a sponge moistene in turpentine. Welfare and Health Convener mentioned that regular walking exercise is a must for diabetics because it allows the b to use up more sugar with less in sulin. On behalf of a former mem of the branch, they donated $50 the Boy Scouts. **Granby West** vo $25 for the Butters Home, and th held a quiz on sewing. **Waterloo Warden**'s roll call: "Name something found in stores today was not there 25 years ago.

Beebe sponsored a memorial se vice at the Memorial Gates to the Beebe Park. The County School F was another success with 1,024 hibits from the elementary schoo **Stanstead North** entertained the County President, Mrs. Lord. Miss Louise Caron, a provincial handic judge, was a guest and comment on correct ways to finish knitting sewing, and made reference to th list of exhibits for the fairs.

Ruth von Brentani
QWI Publicity Convener

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